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A HOME GEOGRAPHY LESSON FOR A CITY SCHOOL

HOW THE PEOPLE OF A LARGE CITY ARE SUPPLIED WITH WATER

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[The following article comprises the notes on a lesson which has been used in elementary science in the first semester's work in the high school. It is typical of the attempt which is being widely made in the elementary science work of both the high school and the elementary school to correlate and unify the various branches of science by basing the lessons upon concrete situations. The lesson here described shows in detail how one particular situation may be used as an occasion for the discovery and application of laws of physics, biology, economics, geology, etc. It may serve as an example, not to be followed in detail, but to furnish a stimulus to each science teacher to work out his own problem so as to meet the needs of his community.—EDITOR.]

When hunters are choosing a site for camp, they try to find one near a spring or stream of clear water and this is one of the things the early settlers always had to think about when they built their cabins and made their clearings. When the water of the spring was not easy to dip up, it was found a great help to dig a hole and set a barrel in it with the bottom knocked out. This kept the dirt from filling the hole and made a deep hollow which soon filled up with clear water. If no spring was convenient, they sometimes reached underground water by digging the holes deeper and lining them with stones. Thus every farm house had its own spring or well.

Would you like to live in a city that had to depend on such wells? What inconvenience would this cause us, especially when the well was deep? Are shallow wells safe, especially when a stable is near?

In villages people often have high tanks which they fill by means of pumps which are driven by windmills or engines of some sort. From these tanks the water runs to the faucets in pipes, the pressure of the water outside pushing that within the house up as high as the water in the tank. (Illustrate with a funnel with tube and nozzle attached.) Would this do for a large city? Would the water rate your father pays dig such a well and buy an engine and pump? Could several neighbors save expense by building

one large tank together? Could a tank be built large enough for a whole town? What is a standpipe?

Tanks large enough to supply a town with water are sometimes built, but if there are hills, there is a better way. What could a farmer do if he had a hill full of springs near his house? Is there a large reservoir in your city? Is it in the upper or lower part of the town? How is it kept full of water?

What never-failing source of water supply has Washington near at hand? Is the Potomac River water at the wharves fit to drink? Would it not be a great saving of expense if we could get the water into the reservoir without pumping it? Would we have to go far upstream to find the water as high as most of the city? Why are there so many locks in the canal which skirts the river? Why are there so many rapids? Where is the descent so rapid that locks had to be built even in Washington's time to let the flat boats get up the river?

In Roman times great cities were often supplied by aqueducts or overhead canals bringing the water from some distant mountain lake or river. Some such idea seems to be suggested in a little book written by the private secretary of George Washington, in which it is proposed to bring the water from above Great Falls by a canal kept high up back among the hills and then extended out over the city. May not Washington have had this in mind in choosing the site of the city? Nothing was done about it until shortly before the Civil War when a conduit or covered canal was built, sometimes by tunneling through the hills and in one place by crossing a stream at Cabin John Bridge. The canal ended in the Macmillan Park reservoir, from which the water is drawn to be filtered and distributed to the city.

A comparison with the water-supply of other cities naturally follows, especially with those similarly located on the "fall line." Interest is aroused in the cause of the remarkable change in the character of the river and surrounding country at Washington, and in the historical geology of the region. Opportunity for the discussion of a number of economic and social problems is given. A further study of the filtration problem introduces the question of disease prevention, and the pumping plant and distribution system prepares the way for some elementary physics.